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16 March 1982

# Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 135

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MINISTER ASKS PROBE IN YELLOWCAKE CONTAMINATION INCIDENT

Plant Spill

Melbourne THE AGE in English 21 Dec 81 p 1

[Text] Adelaide.--The South Australian Minister for Health, Mrs Jennifer Adamson, yesterday called for a report on an incident involving workers handling uranium-contaminated equipment at an Adelaide laboratory.

A Federal Labor MP, Mr Scott (Hindmarsh), claimed that two workers had their arms covered in yellowcake dust which spilled out of a container on 7 December. He said they may have also swallowed radioactive dust.

Mrs Adamson has asked for a Health Commission report into the incident, which Mr Scott said took place while the two men were attempting to recommission an ore filter at the Australian Mineral Laboratories (Amdel) in Thebarton, an Adelaide suburb.

The two workers have undergone blood, urine, chest, lung and X-ray tests at the request of the Health Commission and the samples have been flown to Queensland for analysis by the Health Department there.

Mrs Adamson said she expected the results to be available this week but they would not be made public unless one of the workers chose to release them.

Maralinga

Mr Scott has been campaigning to have the Amdel plant moved to a more isolated position, he claims that its present location is a danger to nearby residential areas.

Amdel was set up by State and Federal Governments at the time of the Maralinga atomic tests in 1956.

Mr Scott said about 2.5 kilograms of a mixture of yellowcake dust and rust had been found by two young workmen in the filter after they had cut it open during a cleaning and repair operation.

Mr Scott called a news conference outside the installation yesterday to release details of the incident.

Mrs Adamson and the managing director of Amdel, Mr Norton Jackson, said many of Mr Scott's allegations about the incident could not be substantiated. They said they were satisfied with safety precautions at Amdel.

Mr Jackson said the danger of yellowcake dust on skin was one of toxicity rather than radiation and the dust merely had to be washed away.

He said the contaminated filter had been bought from the Rare Earth Corporation at Port Pirie eight years ago. It had never been used for yellowcake separation by Amdel and had posed no radiation threat before the incident in question. "Never in Amdel's history has anyone been exposed to higher-than-acceptable radiation levels," he said.

Mrs Adamson said the SA Health Commission had told her it was satisfied with all action taken by Amdel after the yellowcake particles had been found.

#### Health Hazard Clearance

Brisbane THE COURIER-MAIL in English 24 Dec 81 p 23

[Text] Adelaide--Medical tests have given a "clean bill of health" to two workmen who came into contact with uranium yellowcake particles at a laboratory.

The test, conducted by the Queensland Health Commission and the South Australian Industries injuries clinic, found no evidence of radiation poisoning to the men.

The MLA for Hindmarsh, Mr Scott, said two workmen had come into contact with yellowcake particles while working on old equipment in Adelaide.

He said the accident was one of the most alarming concerning radio-active material, and he feared for the health of the men.

CSO: 5100/7517

W. EUROPE GROUP OUSTS JAPAN IN URANIUM ENRICHMENT RACE

Sydney THE SYDNEY MORNING HERALD in English 21 Dec 81 p 2

[Article by Hamish McDonald]

[Text] TOKYO, Sunday. — A West European consortium is now the most likely partner for a potentially huge uranium-enrichment project in Australia.

In talks last week in Tokyo, four of Australia's biggest companies told the Japanese nuclear industry it was out of the race to supply technology and assume partnership in the enrichment venture, at least in the initial stages.

The four companies — The Broken Hill Proprietary Co, CSR, Peko Wallsend and Western Mining Corporation — are members of the Uranium Enrichment Group of Australia (UEGA), the private consortium nominated by the Federal Government to take over enrichment studies.

The UEGA has been evaluating four possible sources of enrichment technology: Japan, France, the British-Dutch-West German venture Urenco, and the United States.

The Australian group had planned to announce this month its preferred partner for a \$4 million feasibility study, which could be followed later in the decade by a billion dollar investment in an enrichment plant.

However, partly because of a

last-minute decision by the US Government to make its technology available to Australia, the final decision has been delayed, probably until March.

A UEGA mission which met Japanese power and engineering companies last week indicated that the three-nation Urenco would almost certainly be the foreign partner for the study and the first stages of production.

The UEGA team is understood to have said that Urenco's technology, based on the centrifuge method, was tried and proven and significantly cheaper than the alternatives.

The Japanese enrichment process, also using centrifuges, was still at a pilot stage and could not yet be regarded as proven for commercial use, the Japanese were told.

The Australian group said it would still be open for Japan to supply technology at later stages of production, and Japanese capital participation would be welcome at the first stage.

Japan's leading business newspaper, the Nihon Keizai Shimbun, yesterday reported disappointment among Japanese nuclear industry firms at the news but said Japan was still interested.

Even though Japanese businessmen were "tending to wear a sour face," the possibility of Japan

helping finance the first stage was still open, the newspaper said.

Japanese industry sources are quoted as saying that since much of the production envisaged by the UEGA would be aimed at Japan, the nuclear industry here would be in a good position to bargain for technology participation in the later production stages.

As well as lagging behind Western Europe and the US in proving enrichment technology, Japanese nuclear industry planners have been split over the long-term strategy for gaining supplies of enriched fuel.

Government agencies have stressed plans for domestic enrichment on security grounds while the power industry, which will have to pay for the fuel, prefers to rely more heavily on cheaper supplies from overseas.

But recently the supply of Japanese-made centrifuges to Australia had been seen as one way of bringing down the cost of establishing a domestic enrichment industry because of longer production runs of equipment.

Japan's three leading nuclear engineering firms — Mitsubishi Heavy Industries, Toshiba and Hitachi — will soon form a joint venture to produce enrichment machines and watch closely for opportunities in Australia.



# CHURCH LOBBYING GROUP OPPOSES NUCLEAR WEAPONS, MINING

## Catholic-Led Campaign

Canberra THE AUSTRALIAN in English 21 Dec 81 p 3

[Article by Nicholas Rothwell]

[Text]

A POWERFUL church lobby group has launched a concerted campaign against nuclear weapons and uranium mining, describing the support given by Australia to the weapons policies of the United States as immoral.

The Catholic Commission for Justice and Peace, which launched the campaign yesterday, will hold a national disarmament conference in Canberra next year with the Australian Council of Churches, a move which will mark a new alliance on the issue of nuclear weapons.

A radical statement has been drafted by the commission on Australia's role in the balance of nuclear arms between the superpowers.

The document, the first formal commitment by the commission to what it terms "the international movement for peace", involves it in a loose alliance with other religious groups campaigning against Australia's role in uranium mining and the American in-

teelligence-gathering network.

These religious groups include Pax Christi, the Students' Christian Movement, the Uniting Church and the Divine Word Mission.

The commission says in the statement that it cannot condone "as a legitimate means of national defence, the use of nuclear weapons in the manner in which the superpowers have prepared for their use".

It accuses the US and the Soviet Union of "making population centres hostages in the power play among the world's military powers", although stated US nuclear policy rules out strikes against non-military targets.

The questions of the legitimacy of a particular war and that of a particular method of waging war, are separate, the commission says. "We need to eliminate the belief that the possession of a nuclear arsenal is necessary or proper for legitimate defence."

"Christians ought to be a pressure group, joining with others in making plain to national leaders that the political will among ordinary people is there to make nuclear disarmament a possibility."

The commission's chairman, Bishop William Murray, has appealed to the Prime Minister, Mr Fraser, to commit Australia to constructive efforts for world peace and to accept a United Nations suggestion that 0.1 per cent of the military budget - in Australia's case \$3 million - should be allocated to "peace education".

According to the commission, a stand against nuclear weapons is "a clear teaching of the Catholic Church".

It says: "Australia has a role, and an important one, to play in world disarmament since this country is a major supplier of natural uranium and can influence the use of the material."

The commission suggests Australia has a duty under the United Nations' nuclear non-proliferation treaty to commit itself to arms control and to protest against failure by the superpowers to exercise "sufficient seriousness" in trying to contain the spread of nuclear weapons.

"It is not only logical but imperative for Australia to match its laudable concern for restricting the use of exported uranium with an equal concern for arms control," it says.

## Civic Council Opposition

Canberra THE AUSTRALIAN in English 22 Dec 81 p 2

[Article by Nicholas Rothwell]

[Excerpts]

THE Catholic Church in Australia has albed itself with a movement that is "manipulated by the Soviet Union against the interests of the West".

The claim came from the president of the National Civic Council, Mr B.A. Santamaria, in a detailed attack on the aims and policies of the Catholic Commission for Justice and Peace.

He said Catholic bishops in Australia had linked themselves with an international movement to put pressure on the United States.

He said the commission, chaired by Bishop William Murray of Wollongong, received \$200,000 this year from the Catholic Church.

Mr Santamaria also claimed the peace movement now joined by the commission had been implicated in using Soviet funds to finance its operations in Europe.

"No person with his wits about him has any doubt the so-called international peace movement was either initially organised by a Soviet Govern-

ment agency — the World Peace Council — or is manipulated by it in the interests of Soviet foreign policy," he said.

He also said the World Peace Council had launched a disarmament campaign last year, and a call for links between religious groups and communist parties had been made by a leading Soviet Politburo member, Mr Boris Ponomarev.

"Do the Catholic bishops of Australia see no connection between the proposed activities of their commission and the Soviet call for a grand anti-war coalition?"

Mr Santamaria also questioned the bishops' overt association with "the communist-oriented anti-uranium campaign" which proposed to deny uranium to Western countries while the Soviet Union continued to develop its nuclear industry at high speed.

## Editorial Comment

Canberra THE AUSTRALIAN in English 22 Dec 81 p 6

[Text]

THE decision of the Catholic Commission for Peace and Justice to launch a campaign against nuclear weapons will find many sympathisers. But it would be wise to remember that denouncing the atom bomb is not in itself enough to save us from holocaust. According to this group of peace-loving Christians, "the legitimacy of a particular war and that of a particular method of waging war are separate". Most national leaders would agree with them.

The agreements on the treatment of prisoners and prohibiting biological warfare show at least some

international lip-service to the church's position. However the outlawed practices are not of a kind which determine whether a war will be won or lost.

Is it not possible that, if the United States and the Soviet Union had not both been able to fight an atomic war for the past 50 years, we might not have avoided a conflict in which one side would have used the bomb as America used it against non-nuclear Japan in 1945? Is there no substance in the NATO argument that tactical "neutron" bombs are needed to redress the balance against the Soviets

Union's superiority in conventional weapons?

A campaign by the "international peace movement" can be carried on in the West, but in the Eastern bloc it will only be allowed insofar as it is directed against the Americans and their allies. The world needs an enforceable, universal agreement on nuclear disarmament. This agreement will not be brought any closer if one camp abandons its nuclear weapons while the other retains them.

CAW 1 5100/7515

FRENCH GIVE REASSURANCES ON ATOLL NUCLEAR TESTING SAFETY

Canberra THE AUSTRALIAN in English 21 Dec 81 p 1

[Article by Win Spusta]

[Text:]

FRANCE has reassured the Federal Government that no cracks or radioactive leaks have occurred on Mururoa Atoll in the south Pacific because of French nuclear testing.

In a paper handed to the Australian Embassy in Paris, France admitted that residue resulting from atmospheric tests before 1973 was scattered by a storm on the night of March 11 this year.

The paper said no trace of radioactivity had been detected in the ocean around the atoll, or in a living marine organism.

It said radiation levels at the site were carefully checked, and all staff kept under permanent surveillance.

The paper said fears of radioactive leaks were "entirely without foundation".

Cracks occurred naturally

because of subsidence of the banks of the massif under the weight of the coral covering it.

This process, also observed in other atolls, creates no danger of pollution by radioactive matter originating in the test cavity, the paper said.

Meanwhile, the Australian Ambassador in Paris, Mr John Rowlands, has underlined the Government's concern about the possibility of France switching atomic testing site to the Kerguelen Islands.

The Government's concern has also been conveyed to the French Ambassador in Canberra, Mr Pierre Carraut.

The Kerguelen Islands are within sight of the Australian islands Heard Island and MacDonnell Island in the sub-Antarctic part of the southern Indian Ocean.

Government sources said they were concerned French tests could cause radioactive pollution in the waters around the Australian islands.

GOVERNMENT SET TO SIGN URANIUM SAFEGUARDS AGREEMENT WITH SWISS

Canberra THE AUSTRALIAN in English 29 Dec 81 p 5

[Article by Wio Joustra]

[Text]

AUSTRALIA and Switzerland are set to sign a uranium safeguard agreement early in the New Year which will pave the way for future yellowcake sales to Switzerland.

Senior Government sources said yesterday negotiations had been completed at official level.

The agreement was expected to be confirmed by the Australian and Swiss governments soon.

Switzerland relies heavily on nuclear energy. About a quarter of its energy requirements come from nuclear fuel and the Swiss have plans for more reactors to be built.

Switzerland will provide another small but useful market for Australian yellowcake.

Canada stopped its uranium sales to Switzerland four years ago because the Swiss did not apply the stringent controls on the export of nuclear installations and technology demanded by the Canadians.

Since then Switzerland has bought its uranium from the US, South Africa and the West

African republic of Niger.

Switzerland was the last on the initial list of countries with which Australia wanted to sign a safeguard agreement.

So far Australia has concluded safeguard agreements with the European Economic Community (covering 10 countries), the US, Canada, Sweden, Finland, the Philippines and Korea.

The only country that has difficulties in accepting the Australian safeguard demands is Japan.

But Australian Government officials are hoping that the last round of negotiations with Japan - potentially the largest single market for Australian uranium - will take place in Canberra in January or early February.

So far seven rounds of formal talks between Australian and Japanese officials have failed to produce an agreement.

## NORTHERN TERRITORY GOVERNMENT BARS BARGE LOADING YELLOWCAKE

Canberra THE WEEKEND AUSTRALIAN in English 2-3 Jan 82 p 2

[Text]

THE Northern Territory Government has refused permission for a Philippines barge, the Mayflower, to enter the port of Darwin.

The Mayflower was the mystery barge waiting in the wings to carry the recently exported yellowcake if trade unions had continued to refuse to handle it.

The barge has been in Darwin waters since December 18 and since last Saturday has been moored just north of the six-mile buoy off Mandorah.

Last year the barge broke a union ban on uranium exports when it loaded 350 tonnes of Nabarlek yellowcake from a private yard on July 10.

The use of the Mayflower to break the ban annoyed local unionists and was directly responsible for the barge being banned.

Queensland Mines and Energy Resources of Australia signed a contract four months ago for the Mayflower to carry, if necessary, 60 containers of yellowcake which were eventually exported by the companies earlier this week.

A spokesman for the Territory Minister for Mines and Energy, Mr Tuxworth, said the barge had been refused entry as part of the deal arranged on December 2 in Darwin between the ACTU president, Mr Dolan, federal and local officials and the Chief Minister, Mr Everingham.

However, the chairman of the Port Authority, Mr Max Hardy, said earlier that as far as he knew the vessel had not been refused entry.

The December 2 deal preceded an ACTU executive decision the next week which softened the ACTU's anti-uranium stance and lifted the bans maintained by local unionists since October 16.

## CONTRACT

Marine Contractors were agents for the barge on its last visit to Darwin and still act for the vessel.

Despite the agreement by the unions to handle yellowcake over the wharf, the agents said the two uranium companies had not cancelled the barge's trip to Darwin to pick up the 60 containers.

Neither, according to the agents, did the Government tell them the barge would not be allowed into the port until after it had arrived off Darwin.

The contract signed four months ago was between ERA, Queensland Mines and Marine Contractors and was conditional on the Mayflower being allowed to enter port.

A spokesman for the agents, Mr Colin Fitzgerald, said he had been informed by the Government that the barge would not be allowed to enter the port.

Mr Fitzgerald said he was unhappy with the way the matter had been handled and felt the Government should have informed him of its decision before the vessel arrived off Darwin.

Marine Contractors didn't lose out entirely because it is believed they acted again as agents for Queensland Mines and arranged the shipment of 18 containers of Nabarlek yellowcake which left this week on the V. B. Perkins barge, Frances Bay.

## BRIEFS

**YELLOWCAKE SHIPMENT--Darwin--**The first of 42 containers of uranium yellowcake was loaded by union labor on the freighter *Gladiolus* at the Darwin wharf yesterday morning, marking the end of union bans on the handling of uranium at the wharf. Yellowcake from the Ranger and Nabarlek mines was blocked by ACTU bans for three months, leaving 278 tonnes from the Ranger mine in a holding yard near the port. This, and another 400 tonnes, makes up the consignment being loaded on the *Gladiolus*. But work did not start without problems. Energy resources of Australia officials and a Territory Mines Department safety expert spent nearly an hour explaining the procedures and possible dangers of handling yellowcake to the watersiders. Several of the 22-strong shift then watched as measurements for alpha, beta and gamma emissions were made on the first of the containers. Work almost stopped half way through loading the first container when one watersider objected to television and Press photographers on the wharf. The photographers left and the container was lowered into the freighter's hold. Loading is expected to take about two days. The uranium is bound for Japan and the US after being processed in the UK, the US and Canada. A further shipment from Nabarlek mine is due to be loaded on the V. B. Perkins barge Frances Bay tomorrow. [Melbourne THE AGE in English 28 Dec 81 p 5]

**RANGER URANIUM SHARES--**North BH's sale of its three million shares in Ranger uranium miner, Energy Resources of Australia, appears to be a logical, if relatively minor, rearrangement of its interests. In the first place, the sale for about \$1.50 a share, or a total of some \$4.5 million, means a small addition to the North BH cash reserves. Second, it rids the big Melbourne mining company of a reasonably unimportant part of its share investment portfolio at a time uranium shares have rallied slightly on the sharemarket. Third, and probably most importantly, it rationalises North BH's own, indirect stake in the Ranger uranium project. Under the terms of the North BH sale, the company's three million ERA shares have been split between the two major shareholders in the Northern Territory uranium miner - EZ Industries and Peko-Wallsend. North BH, in turn, has a one-third shareholding in EZ Industries - a stake it has built up in the last couple of years - which gives it effective control of one of the two biggest direct shareholders in ERA. With the build-up of its interest in EZ Industries, it seemed a little incongruous for North BH to retain its own direct interest in the ERA group. The one disquieting aspects of the deal is that it further reduces the "public" shareholding in ERA and therefore the sharemarket or trading liquidity of the stock. [Canberra THE AUSTRALIAN in English 5 Jan 82 p 11]



## ATOMIC ENERGY CHIEF REVEALS DAE PLANNING

New Delhi PATRIOT in English 30 Jan 82 p 5

[Text]

The Department of Atomic Energy plans to set up a reprocessing plant to handle irradiated fuel from pressurised heavy water reactors at Kalpakkam near Madras, according to the Chairman of the Atomic Energy Commission, Dr H N Sethna, reports UNI.

The setting up of a reprocessing plant is part of the Department's long term strategy for the next two decades.

At present, work is in full swing on the third nuclear power station at Kalpakkam, which will consist of 2 units of 235 MW capacity each.

Writing in the latest issue of 'Nuclear India', published by the Department of Atomic Energy Dr Sethna also says that a waste immobilisation plant for highly active wastes from the reprocessing plant at Tarapur has been completed and is being commissioned.

Dr Sethna points out that in the matter of location of reprocessing plants in India, apart from considerations of economics of size, the major constraint is the problem of transportation of irradiated fuel across long distances by road or rail, passing through fairly populated towns

and cities.

In setting up a nuclear plant of up to 1000 MW capacity, the possibility of locating alongside a reprocessing plant is also being considered, he says.

In fact, the sites chosen for setting up of nuclear power plants have also been evaluated for co-locating reprocessing plants.

Dr Sethna revealed that a decision has been taken to set up four-unit stations thereby reducing considerably the lead time required in the opening of new sites.

The present plans are to set up 10 more units of the 235 MW size of the Narora type stations. Narora is the fourth nuclear power stations under construction in Uttar Pradesh.

Simultaneously work is already continuing on the design of the 500 MW units. In fact many of the components for the Narora plant have been sized to permit easy transition to the 500 MW size. Twelve such units are planned before the end of the century.

On the fast reactor programme he said that they are examining the feasibility of a 500 MW prototype operating before the end of the century.



INDIA

BRIEFS

FIFTH NUCLEAR POWERPLANT STARTED--Work on the fifth atomic power station in the country has begun at Moticher in Gujarat. The 3,830-million-rupees project will have four reactors of 235 mw each. At present the construction of two reactors has been taken up. A spokesman of the atomic energy department told UNITED NEWS OF INDIA that all (?caps)-type reactors in the power station would be fueled by natural uranium moderated by heavy water. The fuel for the project would be fabricated at the nuclear fuel complex in Hyderabad which is now being expanded in a phased manner. The spokesman said the first unit of the power station is expected to be ready in about 9 years. He said the proven reserves of uranium in the country are considered adequate to support the power program of the project. [Text] [BK141125 Delhi Domestic Service in English 0830 GMT 14 Feb 82]

CSO: 5100/2103

## PROCESSING PLANT SEEKS FRENCH COOPERATION

Karachi JANG in Urdu 27 Jan 82 p 3

[Editorial: "Atomic Processing Plant"]

[Text] President General Zia-ul-Haq, after consultations with President Mitterrand in Paris, indicated to reporters that the 1976 agreement with France for the purchase of an atomic reprocessing plant can still be regarded as effective. There were some differences in regard to this agreement, but the time has come now to remove them. The president said that Pakistan neither has the capacity to make an atomic bomb, nor intends to acquire it; it is simply trying to develop atomic capability for peaceful purposes.

The president was quite right in saying that the time has come now to remove the controversies which were created in regard to the atomic plant. We hope that President Zia's trip to France and his consultations with President Mitterrand will be a harbinger of the removal of this controversy. The truth is that the international climate has completely changed in regard to Pakistan. Israel and one of our neighboring countries had propagandized that Pakistan was trying to make an atomic bomb and therefore all the countries of the world should refrain from making atomic resources and technology available to it. It is astonishing and regrettable that the government of former President Carter also was influenced by Israeli propaganda and anti-Pakistan activities and had imposed restrictions even on economic aid to Pakistan. But, with the passage of time, the truth about this malicious propaganda was known to the world and it became evident that Pakistan had no intention of making atomic weapons and simply had plans for the peaceful use of nuclear power. The government of President Reagan also realized that the former U.S. policies vis-a-vis Pakistan were not correct because they weakened Pakistan and encouraged an expansionist power in the region for armed intervention. Like the United States, all the countries of the free world realized the importance of a strong Pakistan in terms of defense and economy.

President Zia has been constantly reassuring in his statements that Pakistan wants to acquire atomic technology not for the sake of making an atomic bomb but for the sake of economic progress. Now from the president's trip abroad it has become evident to the world that Pakistan wants to adhere strictly to the principles of peaceful coexistence and it does not want to wage war with any neighboring country. By offering a non-aggression pact to India, Pakistan has made evident to the world that it is a very peaceful country and it does not believe

in removing tensions through war, but by talks and international means. After the crisis of Afghanistan the nations of the free world are convinced that their interest lies in an economically and militarily strong Pakistan so that it may retaliate against any aggression and may become an impregnable wall in the path of expansionism.

Keeping in view this exigency of time it can be fully understood how important is the acquisition of atomic technology for Pakistan, since it cannot meet its full needs for agricultural, industrial, economic and commercial progress without it. It needs to be made evident to the countries of the free world that Pakistan cannot shore up its defense unless it becomes economically prosperous. If the freedom, integrity and stability of Pakistan is important to the free world then the issue of its economic progress should be fully emphasized. Based on the importance which atomic technology has today in regard to economic progress, Pakistan is fully deserving of its acquisition.

We hope that France, in the light of these facts, will be ahead of the countries of the free world in assessing the importance of the stability and the economic progress of Pakistan and will give every possible cooperation to Pakistan in the nuclear field. We hope that the talks of President Mitterrand with President Zia will become a starting point in the efforts toward removing the differences in regard to the agreement for the reprocessing plant, and all the problems in this regard will sooner or later be resolved. An atomic processing plant in Pakistan provided by France will play an important role in the cooperation and friendship between the two countries. Pakistan and France, by ending expansionism and armed interventionism from the world, can play an important role for a stable peace, for the peaceful use of nuclear power and for the prosperity of the developing countries. It is hoped that the trip of President Zia to France will prove very effective for this purpose.

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CSO: 5100/5620

## NUCLEAR POWER DEVELOPMENT OUTLINED

### Nuclear Operations Program

Warsaw RZECZPOSPOLITA in Polish 20 Jan 82 pp 1, 8

[Article by Krystyna Forowicz: "Polish Atomic Physics in Service of the Economy: Soon a Decision Will Be Made on a Nuclear Power Plant"]

[Text] The future of the Polish nuclear power industry has long been undiscussed. Alone among the CEMA countries, ours still has not begun to build a nuclear power station. And yet there is no longer a grain of doubt that the future belongs precisely to nuclear power.

It is worth quoting some figures illustrating the level of the world nuclear power industry. At the end of 1980 a total of 230 nuclear power reactors with an aggregate capacity of 212,000 MW was under construction throughout the world. After their completion, the total installed capacity of the world's nuclear power stations will reach 348,000 MW. An additional 118 reactors with a combined capacity of about 109,000 MW exist in the planning or order stage. In 1980, atomic power stations accounted for 8 percent of the electricity provided by all of the world's electric power stations. It is expected that their share in 1985 will increase to 11 percent and in 1990, to 13 percent.

Nuclear physics cannot contribute to overcoming our current economic crisis of our country. We have at our disposal a very good team of scientists and good research facilities, although our technical and financial capabilities are fairly modest.

The government minister for nuclear physics Prof Jerzy Minczewski, presented at a session of the Commission for Science and Technological Progress and the Sejm Commission for Legislative Work (14 January 1982) several operational programs whose introduction into our economy would produce more tangible effects. Work to provide agriculture and food industry with nuclear-technology equipment has already been undertaken. The units subordinated to the plenipotentiary--namely, the Institute of Nuclear Research (IBJ) as the sole producer of radioactive isotopes as well as of electron accelerators for the therapy of malignant neoplasms and the United Nuclear Equipment Plants [ZZUJ] as the producer of the measuring devices indispensable to nuclear medicine--will be the main suppliers of the health service.

In the operational program for fuels and energy--in the field of obtaining fissile materials--we have a lot to catch up with. For example, the utilization of radiation waste for the production of phosphorous fertilizers in Polite and Pulawy should be subject to special monitoring by the State Atomic Physics Agency.

The operational program for exports to the CEMA and other countries is chiefly based on the capabilities of the ZZUJ-POLON (which is bound by agreements within the framework of CEMA as well as by bilateral agreements with the USSR) and the IBI, which exports unique or short-series large apparatus units and radionuclides. In each of these two cases, exports reach a value of 100 million foreign-exchange zlotys annually. These organizations have developed many original solutions and the expansion of these exports will remain profitable to us.

The issues raised at the session of the two commissions will be important tasks for the recently established State Atomic Physics Agency. It is to be assumed that in the very near future decisions will be taken regarding the construction of the first atomic power station in Zarnowiec.

#### Nuclear Power Plant Construction

Warsaw TRYBUNA LUDU in Polish 25 Jan 82 pp 1, 2

[Article by Zb. Wrobel: "This Year in Zarnowiec: The Construction of the First Nuclear Power Plant to be Commenced: Ultimately 1,860 Megawatts]

[Text] For a long time now the plans for the development of our power industry have been envisaging the construction of the first Polish nuclear power plant. A decision to start that construction has been--as stated earlier in this newspaper--adopted on 18 January by the Council of Ministers.

The site of the plant--in Gdansk Voivodship, not far from the seashore, at Zarnowiec Lake--had long ago been determined. Preparations for erecting the facility are in an advanced stage, after several years.

This year the first of the targeted 45 billion zlotys will be invested in the construction of this project. The power plant will be equipped with four turbine-boiler units, each with a capacity of 465 megawatts. Similar units already are operating in the USSR, Bulgaria and Czechoslovakia and are being installed in the nuclear power plant under construction in Hungary.

The first two machines will enrich the country's energy resources [by starting to operate] in the late 1980's. This may seem a distant prospect but such power plant construction in every country that has decided to invest in atomic energy has taken a long time.

What is essential is that aside from certain facilities imported from the USSR (among other things, reactors) and Czechoslovakia, most of the machinery and apparatus for Zarnowiec will be produced by Polish industry. For example, the Lomach Plant in Elblag will supply one of the turbine units.

Zarnowiec was selected because this site offers optimal conditions for translating the nuclear project into reality. The high cost of coal transportation causes conventional power plants to be sited in the vicinity of the deposits of energy-source raw materials. For nuclear power plants, on the other hand, site considerations reduce chiefly to geophysical conditions and access to abundant water resources. These requirements are precisely met by Zarnowiec, since it stands on the shore of a sizable coastal lake in Poland's northern region, which receives its electricity via transmission lines from central Poland. A large pump-storage electric power station located on the shore of the same lake is to start operating this year. Such a electric power station operates more economically the closer it is located to a source of low-cost nonpeak energy, such as will precisely be provided by the nuclear power plant.

The two Zarnowiec electric power stations will be integrated into a single energy combine. No less important from the standpoint of outlays is the fact that the nuclear power plant will be erected by utilizing the already existing construction and technological potential of the enterprises as well as the technical knowledge of the people who built the pump-storage power station.

1386

CSO: 5100/3010



#### CNEA DIRECTOR REVIEWS 1981 ACHIEVEMENTS

Buenos Aires LA PRENSA in Spanish 27 Dec 81 p 12

[Text] Vice Adm Carlos Castro Madero, president of the National Atomic Energy Commission (CNEA), labeled the balance sheet of the year's activities as "very positive" and voiced his conviction that the Argentine Nuclear Program will not be affected by reductions which must be made in public spending.

In a press conference held for the purpose of reporting the organization's achievements in 1981, Castro Madero added that in order to comply with the government's decision to reduce public spending the priorities of the various projects had been reevaluated.

He explained that the objective was to ensure that "the resulting postponements in investments would not affect the coherence and continuity of the Nuclear Program. "The Embalse Power Plant, the heavy water plant and Atucha II have top priority," he said.

#### Satisfactory Negotiations

Castro Madero said that 1981 was noteworthy "because of the satisfactory outcome for the country of negotiations with the International Atomic Energy Agency on the subject of safeguard agreements to be applied to the Atucha II nuclear power plant and to the heavy-water industrial production plant, with no additional conditions with respect to the policy being followed by the country in this regard."

"In a way, these negotiations complete a process which began with the awarding of contracts to construct the aforementioned installations and which was carried out in a climate marked by heavy pressure exerted to the effect that Argentina should forsake its clear and responsible policy of independence in this sector which is oriented exclusively toward peaceful uses of nuclear energy," he said.

#### Private Activities

He then added that despite the additional effort required as the result of the economic-financial measures adopted and the situation being experienced by some subcontracting enterprises, continued action was taken to transfer to the private sector production activities which might be of interest to private capital.

In this regard, he mentioned the establishment of the CONUAR (Argentine Nuclear Company), with a majority of private capital, for the manufacture of fuel elements, but without in any way affecting the state's power of decision in that sector. On the other hand, it was impossible to place in private hands the exploitation of the Sierra Pintada deposit because the contracted enterprise was unable to begin work on the projects in the time frames agreed upon.

"As a result, the contract was rescinded and work was begun to draw up the papers for a new call for bids, possibly at the beginning of next year," Castro Madero said.

"Progress was also made in negotiations which would permit foreign enterprises to engage in uranium exploration activities in virgin territories, with such firms assuming the mining risks and cooperating with the CNEA in the exploitation of discovered deposits," he added. Only 25 percent of the output of these exploitations can be exported, provided there is an exchange of relevant nuclear technology and reserves for the Argentine Nuclear Program are assured.

#### Budget

The president of the CNEA said that the 1981 budget allocated by the President totaled 6.695 billion pesos, a figure which includes the credits needed to take care of amortization services and interest of the debt amounting to 2.887 billion pesos.

He went on to say, "The President has established a specific financing structure for approved expenditures in the implementation of that budget and has ordered the CNEA to tap, among others, sources in the domestic and foreign capital market to obtain the funds needed for its operations."

"Obviously," he said, "such action is restricted by provisions of the budget law, within the framework of which all decisions are made of an economic-financial kind to ensure development of the Argentine Nuclear Program."

#### Nuclear Power Plants

While reviewing achievements within the context of nuclear power plants, he said that Atucha I, which will continue to operate without interruption until the end of the year, would attain an output factor [factor de carga] of 90.89 percent that surely will place it among the most efficient nuclear power plants in the world.

He also said, "We will have generated net electric energy 19.5 percent greater than our commitment to the Undersecretariat of Hydroelectric and Thermal Energy at the beginning of the year. This energy represents 8 percent of the total electric energy generated by the national electric sector at a cost of 26.57 thousandths of a dollar per kilowatt hour which can be advantageously compared with other generation sources installed in the country."

With respect to the Embalse power plant, he said that assembly work had been completed on practically the entire plant and that start-up testing on the various systems had been started. "This process will be carried out in 1982, which has been set as the start-up year of the power plant," he said.



Also, similar work will be started on Atucha II, of which 11 percent of the total project has already been completed. With regard to the fourth nuclear power plant, of the six scheduled by the Argentine Nuclear Program, a study is being conducted on the pressure pipes to be used in its construction to determine to what degree the country can undertake construction with its own means; first, with a minimum of foreign assistance.

#### Nuclear Supplies

With respect to the fuel cycle, exploration activities produced an increase in reserves of 1,370 tons of  $U_{308}$ ; and reasonably assured resources total 30,050 tons of ore, which are the equivalent of 255 million tons of oil.

The production of uranium concentrate totaled 143 tons, a figure that is 10 percent higher than forecasts.

Assembly was also completed on the conversion and evaporation equipment which was purchased from a German company (RBU) and will be utilized in the uranium dioxide production plant. The plant is scheduled to go into production in mid-1985.

Work was completed on the development of a nuclear purification process that will be based on a patent which will integrate national production of uranium dioxide.

#### Fuel Elements

As regards the manufacture of fuel elements, 240 of these units were produced in a pilot plant for the Atucha power plant, where they are performing quite normally. As a result, the transfer of the acquired technology, equipment and specialized manpower to the industrial plant constructed in Ezeiza has been initiated. At the same time, the first ingots of zircalloy were produced. This alloy is needed for the manufacture of fuel element casings; and on the basis of thick-wall pipe techniques, the entire process for the manufacture of pipe casing was developed.

As for the fuel reprocessing plant, which has been a cause of concern in countries that have nuclear weapons, the following results have been attained: 100 percent in the development of engineering; 78 percent in construction; and the assembly of the electromechanical equipment has been started. It is scheduled for completion in August 1987.

#### Heavy Water

The heavy-water experimental production plant was 60 percent completed while the industrial plant being constructed in Arroyito was 33 percent completed. The first shipments of Swiss processing equipment have been received and are scheduled to be placed in operation in 1984.

#### Other Achievements

In his 45-minute report, Castro Madero also gave an account of what had been accomplished in the radioisotopes and radiation; radiological protection and nuclear safety; and research and development sectors.

In this connection, he emphasized the construction of the heavy ion accelerator, of which 80 percent of the construction work has been completed. The accelerator tower and the injector have already been set up and voltage tests on the accelerator are expected to begin soon.

Also, the construction of Argentine Nuclear Reactor 1, in the Bariloche Atomic Center, was 90 percent completed and is expected to be finished next year.

Costa Madero also mentioned the work done in training; technical assistance projects and programs for several Latin American countries; contracts and agreements signed with Brazil and contracts with the Soviet Union, in the laminators sector and replacement parts for the zircalloy pipe plant, provisions of heavy water and negotiations on uranium enrichment.

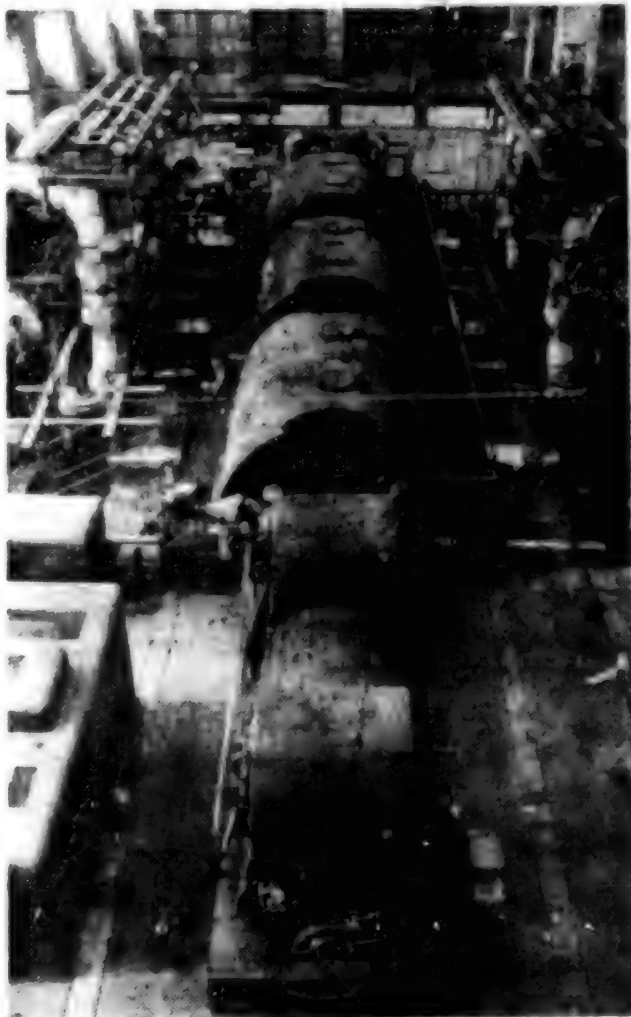
#### *Coherence and Continuity*

The president of CNEA said finally, "The coherence and continuity of the Argentine Nuclear Program indicate that, above and beyond temporary circumstances or difficulties, the country is making progress."

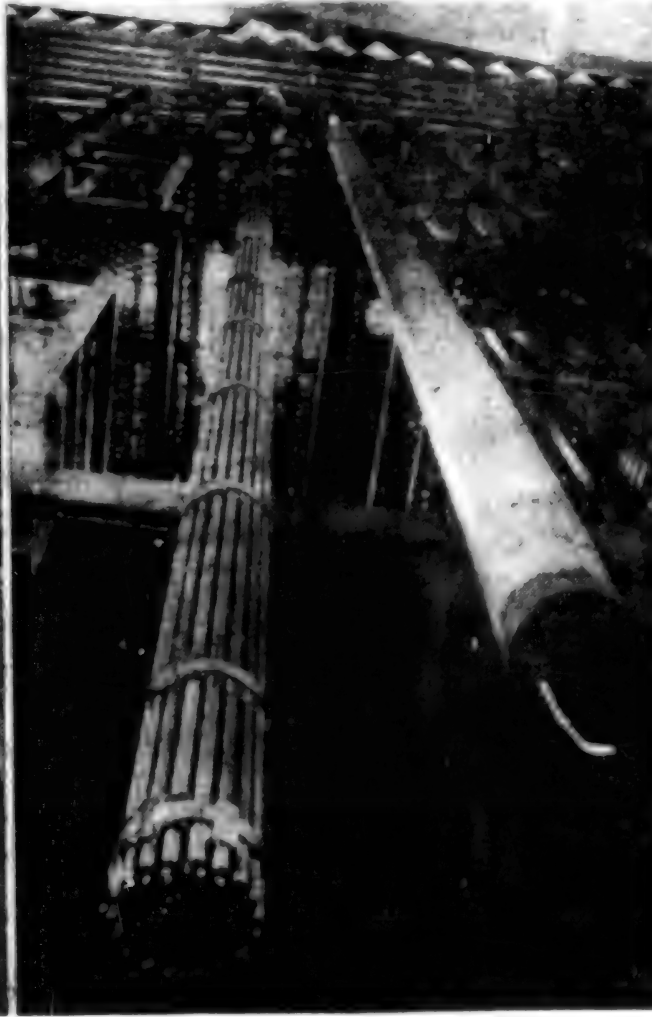
"Persistence in effort, clarity in objectives and the domestic sharing of a certain idea of the country we want permit us to retain a reflexive optimism that we will reach the established goals," he concluded.

PHOTO CAPTION

(right above)  
Construction work on the  
reactor building of the  
Atucha II nuclear power  
plant.



(Left Below) Interior of the turbogroup  
building of the Embalse power plant.



(Right Below) Fuel element for Atucha I,  
manufactured by the CNEA.

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CSO: 5100/2100

## BRIEFS

ATOMIC COMMISSION IN REGIONAL PROJECTS--According to a foreign ministry decree that has just been delivered to the Ecuadorean Atomic Energy Commission [CEEAA], the CEEAA will participate in regional technical assistance projects under the aegis of the International Atomic Energy Agency [IAEA] or the UN developmental organization dealing with peaceful uses of atomic energy in member countries of the Cartagena agreement. The commission is also authorized to adhere to the La Paz protocol, which already has been signed by the atomic energy agencies of Bolivia, Colombia, Peru and Venezuela. Carlos Velez, assistant general director of the IAEA's cooperation department, has addressed Julio Cesar Pineda, executive secretary of the national commission for development of nuclear industry in Venezuela and coordinator of the Cartagena agreement member countries, regarding this project of developing nuclear science and technology in the Andean region countries of Bolivia, Colombia, Ecuador, Peru and Venezuela. [Text] [PA142140 Quito Voz De Los Andes in Spanish 1230 GMT 14 Feb 82]

CSO: 5100/2099

## BRIEFS

URANIUM PRODUCTION NOTED--The Saudi newspaper AL-JAZIRAH AL-MASA'IYAH, 11 February 1982, reported under the title: "Tunis can Produce 110 Tons of Uranium," the following statement by Abdelaziz Lasram: Mr Abdelaziz Lasram, the Tunisian minister of economy, asserted to AL-JAZIRAH AL-MASA'IYAH that Tunisia is capable of producing 110 tons of uranium, a basic element in the production of nuclear energy. This constitutes the first announcement of Tunisian capability to produce this substance. Furthermore, AL-JAZIRAH AL-MASA'IYAH was informed that Tunisia is thinking of using advanced technology to determine its real land and sea oil resources. Official sources declared that the annual increase in energy consumption will exceed production by 11 percent, which will create an energy shortage in the next few years. This is the reason for the announcement concerning the existence of uranium in Tunisia which will be used to produce nuclear energy in anticipation of the future. [Text] [Tunis AL-MUSTAQBAL in Arabic 22 Feb 82 p 2]

CSO: 5100/5003

## URANIUM PROCESSING PLANT TO BEGIN OPERATIONS IN FEBRUARY

Libreville L'UNION in French 21 Jan 82 pp 1, 4

[Article by Mualabu Mussamba: "The Second Vice-Prime Minister is Invited to Visit the New Uranium Processing Plant in Moanda"]

[Excerpts] The development problems of the Franceville Uranium Mining Company (COMUF) were the main topic of discussion at the audience that the second vice-prime minister, the minister of Mines and Oil, Mr Etienne-Guy Mouvagha Tchioba, granted to Mr Maurice Delaunay, chairman of the COMUF administrative council.

The audience dealt mainly with problems involved in Mr Etienne-Guy Mouvagha Tchioba's forthcoming visit to Mounana and with the uranium marketing program for the current year.

The two men also reviewed the problems of Gabonizing cadres and employing the young Gabonese engineers who will be graduating from technical schools this year both in Gabon and abroad.

Another subject of concern to COMUF is personnel training and miners' safety, especially since the extraction work is done underground.

At the end of the audience granted by the second vice-prime minister and minister of Mines and Oil, the chairman of the COMUF administrative council, Mr Maurice Delaunay, said that the new ore processing plant will be ready in late February.

Thus, the studies, the examination of the report, the decision and the signing of the contract that took place throughout the year 1979 led to the actual beginning of work in April 1980 with the symbolic laying of the first stone by Head of State Omar Bongo.

All civil engineering work has been done by SOCOBA [expansion unknown]; the framing, equipping, plumbing, roofing and unloading have been done by COFITEC [expansion unknown] (the latter company built the solvents and sulfuric acid factories in 1979). The Saunier-Duval Company took care of the instrumentation and regulation in fully automated installations.

COMUF explains that the new factory includes a pumping station on the Likedi river. It will provide the factory with 600 cubic meters an hour of industrial water. Holding tanks with a capacity of 3,000 cubic meters are also planned; they are to be connected by metal pipes 4 kilometers long and 350 centimeters in diameter.

The dump for ore coming from the mine is located near the primary crushing station, which is followed by other stations such as the grinding mill and the slurry station. The slurry first reaches the desired volume and then goes through chemical treatment, which involves dosing with sulfuric acid, separation of solids from liquid and washing on three large-capacity belt filters.

#### An Investment of More Than 12 Billion Francs CFA

The filtering yields a uraniferous liquid with about 2 grams of uranium per liter of solution; this is sent to the old shop in the solvent factory built in 1977, the uranium-bearing solution being sent through pipes for about one kilometer. In the solvent's workshop, the uranium is purified: it is made soluble in the new factory where it undergoes the last treatment. The end product is magnesium uranate with 75 percent metallic uranium.

This new factory will have a capacity of 80 metric tons [mt] an hour or 450,000 mt a year as opposed to 300,000 mt at present. The investment of 12.6 billion francs CFA is borne entirely by COMUF. This same factory will make it possible to produce 60 mt of acid a day as opposed to 25 mt previously. Investment has risen to 1.8 billion francs CFA.

We should also mention that the new factory uses 6,300 cubic meters of concrete; 5,000 mt of building materials; 1.11 million square meters of electrical area; and more than 445 people in the various workshops.

As for the problems of marketing, Chairman Delaunay indicated that Gabon will hold to the price on the world market, which will enable COMUF to diversify its clientele. As concerns Gabonization, the administration council chairman noted that a Gabonese has been named assistant general director of the company. He is Mr Tonda, who is to take a 6-month training course in France.

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CSO: 5100/5617



## U.S. COMPANY SUSPENDS URANIUM EXPLORATION, ANOTHER INTERESTED

Monrovia DAILY OBSERVER in English 18 Feb 82 p 7

[Excerpt]

The exploration for uranium by an American-based Company, Coastal Liberian Uranium Enterprises (CLUE) which started in 1978, gained some momentum in 1981 with the discovery of uranium in Bassa County. However, due to the geologic complexity of the host rocks, further detailed investigation is necessary to determine the quality and quantity of uranium.

The Three-Mile Island nuclear disaster in the US in 1979, depressed market conditions and harsh environmental measures have had their toll on the uranium industry in the United States. However, the situation is the reverse in other parts of the world where Western Europe, Japan, USSR and Argentina are substantially increasing their nuclear-generating capacity.

The energy problematique is a complex one and cannot be solved by any single solution, but a combination of several factors

working together, and all forms of energy including nuclear power must be part of that answer.

Meanwhile, CLUE has suspended all exploration activities for uranium and has applied for the right to explore for other minerals.

The American-based Mineral company, Anaconda, has expressed considerable interest in the exploration for uranium in Southeastern Liberia. Already Anaconda and Liberia Geological Survey geologists are engaged in a preliminary assessment of that area. If these initial efforts prove to be encouraging, Anaconda would apply for a concession agreement.

CSO: 5300/5661



# DETAILS ON KOEBERG, OTHER STATION, NONPROLIFERATION PACT GIVEN

Johannesburg THE CITIZEN in English 18 Feb 82 p 4

[Text]

EXTRA precautionary measures, costing nearly R2-million, were built into the Koeberg nuclear plant after crises experienced at nuclear installations in other parts of the world, the Minister of Mineral and Energy Affairs, Mr F W de Klerk said yesterday.

Replying to a question by Mr Ron Miller (NRP, Durban North), Mr De Klerk said occurrences at nuclear power stations around the world were continuous-

ly monitored and studied, and recommendations applicable to Koeberg were incorporated.

Measures taken, concerned emergency procedures aimed at the extension of the technical support centre and expediting the flow of information from the operations centre within the power station to outside control points. Minor changes to equipment were also effected. — Sapa.

## More Nuclear Energy Stations not Excluded

The Natal North Coast had been investigated as a possible nuclear power station site prior to 1976, but no decision on its suitability was taken, the Minister of Mineral and Energy Affairs, Mr F W de Klerk, said yesterday.

Replying to a question by Mr Ron Miller (NRP, Durban North), in the House of Assembly, Mr de Klerk said the investigation had been preliminary, and part of a search for potentially suitable sites along the South African coast.

No additional nuclear power station was being considered at present. However, taking into account Escom's Load Forecast, the construction of others could not be excluded. Before deciding on a further nuclear station, all relevant aspects would be thoroughly investigated.

Only when another station was felt to be justified, would an intensive investigation for a suitable site be launched, Mr de Klerk said.

## Anti-nuke Considered

THE Minister of Foreign Affairs, Mr Pik Botha, said consideration was being given to South Africa signing the Nuclear Non-Proliferation Treaty, but no decision had yet been reached.

Replying to a question by Mr John

Malcolmson (FFP, Port Elizabeth Central), whether representations had been made to South Africa since January 1 last year to sign the treaty, Mr Botha said inquiries were made from time to time by certain western organisations.

CSO: 5100/5625

GOVERNMENT URGED TO RETAIN NUCLEAR-THRESHOLD TRUMP CARD

Johannesburg DIE TRANSVALER in Afrikaans 19 Feb 82 p 8

[Editorial: "Our Nuclear Capability"]

[Text] Signing of the international Nuclear Non-proliferation Treaty by South Africa recently came up for debate again in Parliament. It is an extremely sensitive subject. So it is understandable that Pik Botha reacted very cautiously on the issue.

It is not a simple matter for South Africa given the definitely threatening situation it has internationally and particularly given the fickleness of different U.S. administrations.

We are considered a so-called nuclear-threshold power quite easily capable of joining the "nuclear club."

On the one hand this brings special pressure to bear on the country, as exemplified by the Carter administration's refusal to deliver nuclear fuel to South Africa as agreed unless the treaty was signed.

On the other hand it puts a very strong diplomatic card in South Africa's hand.

Even the Carter administration realized that it must not completely alienate South Africa in this context, since such a high priority is given to the limitation of nuclear weapons.

If South Africa should go into producing nuclear weapons, it would lose that diplomatic trump card in exchange for a military striking-power trump card, which, as is generally known, could not be so easily played.

Taking everything into consideration it is probably more to South Africa's advantage to remain a threshold power so long as possible.

CSO: 4701/36

ERRATUM: The following is a corrected version of an article originally published in JPRS 80248 of 5 March 1982, No. 134 of this series, on pages 16 and 17.

AUSTRIA

#### KREISKY SUGGESTS NEW REFERENDUM ON ATOMIC ENERGY

Vienna WIENER ZEITUNG in German 13 Jan 82 p 2

[Article: "Atomic Energy Is a 'Hot Potato '"]

[Text] There will be no atomic electricity in Austria without a new referendum, stressed Chancellor Dr Kreisky yesterday after a meeting of the cabinet. The Austrian Socialist Party feels compelled to stick with the atomic energy ban for the duration of the legislative period. Kreisky believes that, in view of the changed energy situation, the Austrian people will have to decide within 2 to 3 years whether they can afford the luxury of a completed but unused atomic power plant. If the vote goes against turning on the plant, then obviously the people will have spoken again. Kreisky expressed the conviction that the people have already changed their minds since the 1978 vote.

Kreisky also stressed that the question of atomic waste disposal must first be clarified. Numerous new technologies are known, and there exists a certain willingness on the part of the Americans to help solve this problem. Aimed at Reagan, the Chancellor said, "One cannot say on the one hand that you cannot make a natural-gas deal and then on the other hand leave us to solve the problem by our own devices." The chancellor stressed that there have been no discussions in this direction since: "The Austrian Government can not do what it is not permitted to do."

The chancellor pointed out that Austria may need more than one atomic power plant since experts have told him that three may be required. This will have to be decided by a vote of the people.

Yesterday, a spectrum of positions on this topic was voiced by the various political groups. Liberal Party Chairman Steger asserted that if a coalition with the Socialist Party depends on the freedom to vote yea or nay, then there will be no coalition. Liberal voters can rest assured that this party will not vote for atomic energy in any committee. The Socialist Party has coupled its fate with Zwentendorf, and also the People's Party is no guarantee that Zwentendorf will not go into operation. Only the Liberal Party consistently opposes it.

Socialist Youth Chairman Josef Cap stood behind his organization's "no" on Zwentendorf. He also spoke out against Kreisky's coupling his bid for reelection with turning-on Zwentendorf. He is basically for a new referendum as long as the question is

properly put. The last referendum was intended to avoid an atomic-power election campaign according to Kap. He now wonders why it is being brought into the campaign. Professor Alexander Tollman spoke in the name of the antinuclear forces for holding to the decisions already made.

In a communication yesterday, the "Unions Against Atomic Energy" sharply protested the chancellor's position on the nuclear-energy question. They declared that they will oppose his position with all the power at their disposal.

9160

CSO: 5100/2081

# POWER AGENCY ATTACKED IN REACTOR FAILURE

Stockholm DAGENS NYHETER in Swedish 10 Feb 82 p 5

[Article by Ingvar Andersson and Bobi Sourander]

[Text] The State Power Board had made "an incomplete safety analysis" in December 1981 when it requested permission to start up the defective nuclear power plant Ringhals 3 at half power. The risk of new and more serious accidents was obvious, the Nuclear Power Inspection Board said in a highly critical statement that put a stop to the plans of the State Power Board.

The State Power Board did not even present clear instructions for what the personnel should do if a new and more serious accident occurred.

"Yes, indeed, we let them have it," director general Lars Nordstrom of the Nuclear Power Inspection Board (SKI) confirmed. "In our opinion, the State Power Board took the matter much too lightly when, after a serious accident including an emergency shutdown at Ringhals 3, the board simply applied for permission to plug the defective pipes, obviously in order to start up again.

The accident at Ringhals 3 occurred on 21 October last year. At that time, an emergency shutdown occurred due to a leak in one of the three steam generators that drive the turbine at the power plant. About 37 m<sup>3</sup> of high-level radioactive water leaked from a defective pipe into the water system of the steam generator.

This emergency shutdown was one reason that a faulty design in the steam generator was discovered. The reactor was constructed by the American Westinghouse Company, which at the same time had problems with several other steam generators, including one at the nuclear power plant in Almaraz, Spain.

Six weeks after the accident the State Power Board applied to SKI for permission to plug the defective pipes.

"Ultimately, that was all the State Power Board requested. They did not even mention restarting the reactor after the damaged pipes had been plugged."

#### Sharp Refusal

SKI believed, however, that the repairs on the damaged reactor were part of an operational program. For this reason, SKI wrote an especially sharp letter of rejection to the State Power Board.

The first thing SKI requested was an operational program--an explanation from the State Power Board of how, when, and to what extent it wished to operate the inadequately repaired nuclear power plant.

Then when SKI received an "outline" of an operational program it reached its decision:

"It is the opinion of SKI that the State Power Board's application is based on an incomplete safety analysis."

SKI then criticized the State Power Board on several points of fact:

The State Power Board had failed to analyze adequately the causes of the damage to the pipes. On the contrary, the material presented by the State Power Board indicated that there was considerable risk for additional damage if Ringhals 3 were restarted at half power for 60 days, as requested by the State Power Board.

#### Serious Misjudgment

A "serious misjudgment" was made at Ringhals 3 concerning the flow of water in the steam generator. This caused vibrations which, in turn, damaged pipes containing high-level radioactive water.

Calculations by the State Power Board indicating that operation of Ringhals 3 after temporary repairs would be safe were based only on computer calculations and tests with models, not on any measurements under actual conditions.

The State Power Board used a lower figure in its safety analysis than that prescribed by Westinghouse in its safety guide.

Experience from the Westinghouse reactor in Almaraz, Spain indicates that the danger of additional pipe damage is obvious if the reactor is started up after temporary repairs.

SKI stressed earlier that plugged pipes in a steam generator can be worn away in such a way that pieces of metal whirl around in eddy currents so that intact pipes are damaged. The State Power Board has dismissed this as impossible. Now, even the manufacturer, Westinghouse, has warned that this can occur.

Finally, and perhaps most serious, SKI stated:

Safety studies clearly indicate that an increase in the number of small leaks in the water pipes of the steam generator directly increases the danger of a more serious accident. If a reactor that has undergone temporary repairs is to be operated, much stricter requirements must be made on the safety system and the personnel. The State Power Board had done nothing along these lines.

"The reactor accidents at Ginna in the United States and Almaraz, Spain, have shown that we were right," Lars Nordstrom of SKI said.

SKI's sharp rejection was one of the reasons that the damaged reactor in Almaraz was not allowed to restart as soon as anticipated. Both the Spanish supervisory authorities and Westinghouse became wary. Almaraz installed additional measuring devices and developed an extremely cautious program of operation despite the damage.

#### Fuel Leakage

In Almaraz the damage was much less extensive. This is one of the reasons that the reactor could be started for temporary operation. There the fuel rods were not damaged, as they were at Ringhals 3. To be sure, the fuel leakage at Ringhals 3 is extremely slight, but it could become dangerous if a more serious accident occurred.

"When we applied to SKI for permission to plug the defective steam generator it never occurred to us that we could restart the reactor afterward. The idea of operating it at half power was merely a hypothetical example."

This was the explanation of engineer Bertil Agrenius, project leader of the State Power Board for the Ringhals nuclear power plant when he commented on SKI's criticism of the State Power Board.

#### Denied

"We intended only to plug the damaged pipe in the steam generator," Agrenius said. "This must be done sooner or later in any case, and it seemed reasonable to do it sooner."

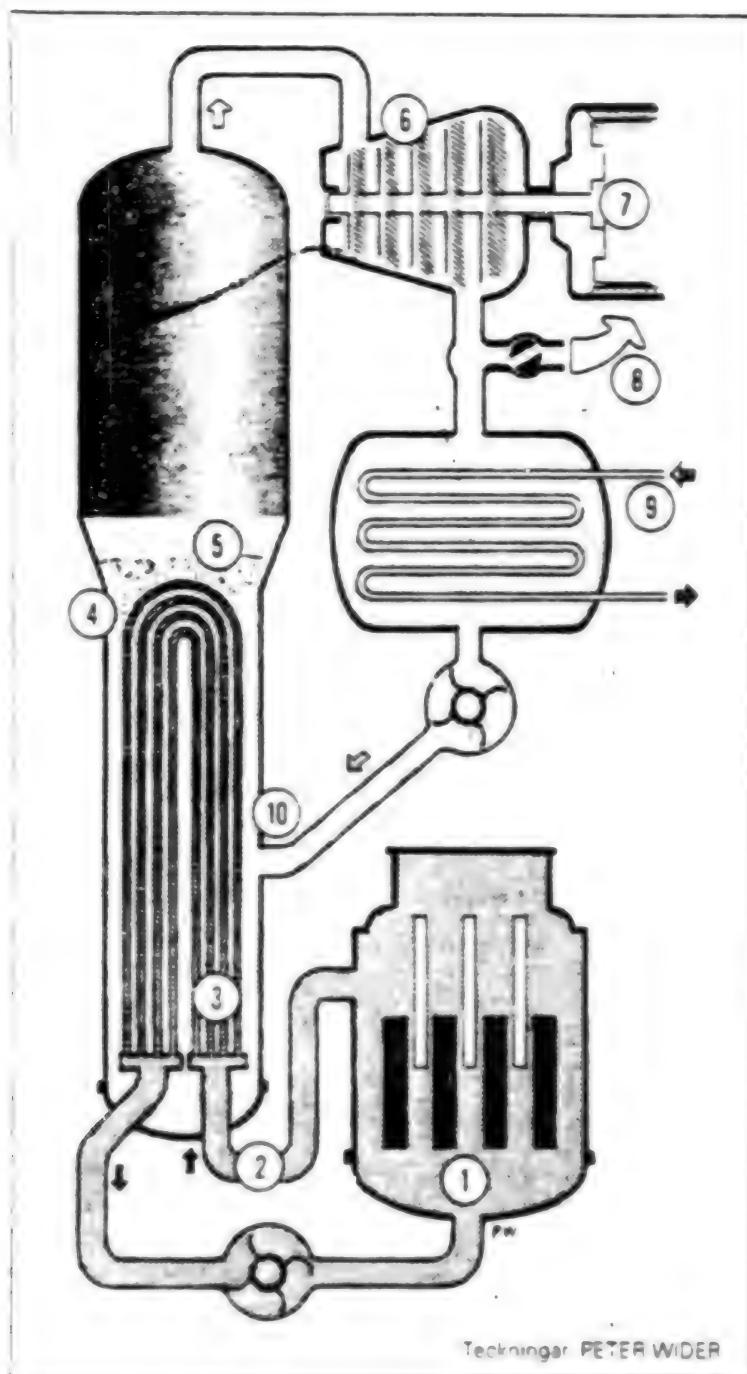
Agrenius denied that the State Power Board took a chance on approval by SKI to operate at half power. If this chance had succeeded, it could have been dangerous.

"We were not ready to start up the reactor at that time, nor are we ready at present," Agrenius said.

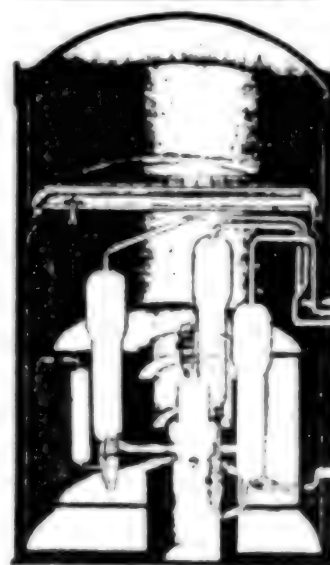
"Many questions asked by the Nuclear Power Inspection Board in its memo are questions we are asking ourselves," Agrenius said.



"It is also our goal to operate the reactor at a safe level."



DN bakgrund



These diagrams show a pressurized water reactor similar to the one at Ringhals 3. The small diagram shows the overall layout of the plant with the reactor in the middle and the three steam generators around it. The larger diagram shows a more detailed drawing of the damaged reactor.

From reactor (1) hot radioactive water is pumped into the so-called primary system (2) through steam generator (4) and back to reactor (1). When water in the primary system passes through the several thousand pipes (3) in the steam generator, water in another system (secondary system) is converted to steam (5) which flows to turbine (6) which drives generator (7). The steam can be released to the atmosphere at (8). In cooling coil (9) the steam is cooled to water which flows back to the steam generator at (10). It is at (10) that the inflowing water formed eddies that caused vibrations in the pipes at (3), thus scraping them against their supports. Several pipes were damaged and one cracked, allowing 37,000 liters of high-level radioactive water to flow into the secondary system. In this way, a small quantity of radioactivity was released through (8).

#### "We Are Losing 150 Million"

If Studsvik is not allowed to restart its R 2 research reactor soon, the economic effects will be devastating to the company.

Studsvik claims it will lose almost 150 million kronor in the next 4 years due to shutdowns. The company cannot bear such losses without raising additional capital, company representatives said.

Now, Studsviks Energiteknik is writing to the government requesting that it lift the ban on operating R 2. In a previous letter to the Nuclear Power Inspection Board, Studsvik maintained that the risk involved in operating the reactor was not so great that it could not be eliminated with extra safety precautions.

In December last year the government and SKI decided that the research reactor must be shut down due to the formation of cracks in the reactor vessel. The reactor now has been shut down since the beginning of the year.

The extra safety precautions the company wishes to take in order to restart R 2 include the installation of an extra control rod, reduced top pressure during transients, and if SKI so desires two or three steel bands would be installed around the vessel.

According to Studsvik's plans, a new vessel would be installed by 1 July 1984. This would require investments of 12 million kronor.

If Studsvik's request is granted soon, the company's losses will total about 20 million kronor for downtime this year and for the added safety precautions. If, on the other hand, the reactor must remain down until the new vessel is installed in 1984, losses will amount to 150 million. Studsvik Energiteknik cannot afford this.

A second alternative, shutdown until September of this year, when the reactor's extra vessel could be connected, and additional downtime during the eighties for replacement of the vessel, also would have a negative impact on the market, according to Studsvik. But the company could use this alternative without additional capital.

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SWEDEN

# PAPER OPPOSES EXPORT CREDITS TO NUCLEAR FIRM

Stockholm DAGENS NYHETER in Swedish 12 Feb 82 p 2

[Editorial by Olle Alsen]

[Text] According to a reliable source (the entire matter is classified) Asea-Atom has been granted export credit guarantees of "only" 700 million, instead of 4 billion as recommended by a certain government party, for its approximately 10 billion kronor bid to Mexico for the first two proposed nuclear reactors for that new oil-producing country.

In actuality, this should be of no importance, since it would take a miracle, or perhaps the opposite of a miracle, for tiny Asea-Atom to take home this trophy after competing with much larger reactor salesmen from throughout the nuclear world.

Exporters such as the United States, France, etc. also can be expected to butter up the Mexicans not only with the customary bribes, but also with promises of delivering equipment for the entire nuclear fuel cycle, from uranium and enrichment facilities and reactors to reprocessing plants where the Mexicans may produce plutonium for peaceful or other purposes.

Obviously, Asea-Atom will continue to play along. After all, the Finns turned their back on Asea after the first two ill-fated reactor purchases and the semi-state-owned company has not managed to scrape up any other customers for its BWR 75 boiling water reactor (the Forsmark model)--despite a desperate effort during the seventies in countries such as Pakistan, Turkey, Iraq, Libya, and South Africa (the list of countries alone is enough to cause chills to go up and down the back of anyone who is not blind to the connection between the proliferation of nuclear technology and nuclear weapons).

How many times did we hear from Vasteras that it simply was a matter of days before Turkey would purchase Swedish reactors? This did not occur, however, even though the reactor practically was being given away, from a financial standpoint. Would it not have been pleasant for the present Turkish military junta to have Swedish nuclear technology?

No wonder this caused Prime Minister Falldin to wish he had the power to stop the export of reactors as he does in the case of weapons exports. No wonder the youth organizations of both government parties protested vigorously on moral grounds against state guarantees for the hawking of nuclear hardware in Mexico.

Apparently, however, the young people's protests are meeting deaf ears on this issue. Fortunately, however, the credit guarantee of 700 million, if this figure is correct, never actually will be required.

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PROFESSOR VIEWS SWISS NONPROLIFERATION POLICY

Zurich NEUE ZUERCHER ZEITUNG in German 10 Feb 82 p 23

[Article by Prof Dr Rudolf Bindschedler, Bern: "Nuclear Energy and Foreign Policy"]

[Text] One of the few basic principles which the superpowers have in common is the maintenance of the nuclear arms monopoly--to keep other nations from acquiring nuclear weapons. The other three nuclear arms states and several others go along with this. The principle became a part of international law in the Nuclear Nonproliferation Treaty of 1 July 1968. Switzerland joined it on 9 March 1977. The nuclear arms monopoly also has significant impact upon the peaceful use of nuclear energy.

Nonproliferation Policy Objectives

Nonproliferation policy is based on the assumption that any increase in the number of nuclear arms states has a destabilizing effect, that it is a threat to security and that it increases the risk of nuclear conflict. Negotiations on arms control and limitation would become still more difficult. Added to this of course is the vested interest of today's nuclear arms states in maintaining their monopoly which has its effect not only on power politics and the military sector, but also on economic matters. To soften the discriminatory effects, the nuclear powers obligated themselves to conduct negotiations concerning effective measures for ending the nuclear arms race and for nuclear arms reduction (Article VI). All parties to the treaty further pledged themselves to facilitate the most extensive exchange of equipment, materiel and information on the peaceful uses of nuclear energy and to cooperate in further development of using nuclear energy for peaceful purposes. Article IV specifically provides for the right of treaty members for research, production and utilization of nuclear energy for peaceful purposes.

Today's Situation

What does the situation look like today? Years ago General Beaufre had already expressed doubts about the validity of the basic security policy principle. In a paper published by the London Institute for Strategic Studies, Professor Kenneth N. Waltz (Adelphi Papers, Fall 1981) comes to the conclusion that a slow proliferation of nuclear weapons would reduce the number of armed conflicts, promote peace and international stability, and should therefore be welcomed rather than feared.

Deterrence would increase; nuclear weapons could substitute for ruinous and dangerous conventional arms races and would, by virtue of their inherent risks, motivate governments toward circumspection and restraint.

However, this view neglects the fact that nuclear deterrence against conventional attacks is negligible and could be bypassed, that new nuclear powers would have only few and relatively primitive weapon systems whose risks and effects would be overestimated and could therefore contribute to the temptation of making a first strike. Nor does it accord sufficient importance to actual existing situations and to factors of irrational politics.

It is a fact that today any nation having a certain industrial and scientific capability could produce nuclear weapons independently and without foreign assistance, if it chooses to do so. Without foreign assistance this would merely take longer and be more expensive. Any state which is convinced that without nuclear arms it would be unable to guarantee its independence and security would try to overcome those obstacles. The objective of nonproliferation policy cannot therefore be attained for the long term without the agreement of all states concerned and cannot be enforced.

#### Questionable Pressure for Extended Obligations

But for several years certain states, especially the United States and Canada, have attempted to do just that. Obligations extending beyond the discriminatory nuclear prohibition treaty are supposed to be imposed upon nonmembers of the nuclear arms club, consisting of limitations in exporting nuclear materiel and installations, even generally useable products so long as they are intended for nuclear facilities; also, in prohibiting the exchange of information and in giving producing countries a voice in how nuclear materiel is to be used. As a means of enforcement, a ban on exporting of nuclear fuels and facilities for reprocessing fuel residues has been imposed. Thus Canada has for several years blocked uranium deliveries to Switzerland so as to enforce a renewal of the existing cooperative agreement to include new conditions.

It is to be hoped that the [Swiss] federal government will refuse to sign the new draft agreement, regardless of its content, until such time as the embargo is lifted; it would be shameful to give in to blackmail.

None of these measures are based on legal concepts and are partially in violation of existing international law. The obligations imposed on the nuclear powers by the treaty have largely remained meaningless. The doctrinaire politics of pressure and enforcement measures are also contrary to the main objective of nonproliferation, since they have a counterproductive effect. They merely lead to an increased desire for greater independence. Most nonmembers of the treaty, which includes most of the so-called nuclear threshold powers, are even more strongly deterred from joining the treaty, and the treaty members might consider resigning from it. Thus the whole system could become unstable.

This development couldnot have been predicted. Switzerland joined the treaty because it counted on its being implemented and because it wanted to contribute to a reasonable nuclear policy in the interest of security. Had it refused to



join, this would merely have worsened its position; the treaty does of course provide a legal basis for protecting its interests and furthers them. But there is no reason for Switzerland to accept limitations beyond the terms of the treaty and to submit to an impairment of its freedom of action.

#### What Should Be Done

The main thrust of nonproliferation policy consists of solving political and economic problems which might provide an impetus to the nations to acquire nuclear weapons. The questions are of a political rather than a technological nature. That is why in the long term nonproliferation can only be achieved through positive action by the nuclear powers. It must be made more attractive primarily through compensatory actions, if for no other reason than to at least partially make up for existing discrimination. Such compensatory actions are, as stated above, provided for in the agreement. They could consist of the following:

1. Arms limitation, or at least arms control.
2. Security guarantees going beyond obligations provided for in international law. For states which are nonmembers of the treaty, only negative guarantees would be appropriate, i.e., an obligation by the nuclear powers in no case to use nuclear weapons against non-nuclear powers or even to threaten such use.
3. Support for and increase of economic cooperation. Specifically, this would include delivery of fuels and the enrichment of natural uranium; reprocessing of used fuels insofar as non-nuclear powers renounce doing this themselves; storage of nuclear wastes; and finally, the exchange of scientific and technical information. The goal of all this would not be to obligate the states to make deliveries and perform services, even though this would be desirable under certain circumstances, but rather, not to erect official obstacles to such deliveries and services--on the contrary, to facilitate and promote them.

#### Verification Conferences

Switzerland has for some time complied with these guidelines, and voted for them in view of the situation then existing, at the first verification conference of the nonproliferation treaty in Geneva in 1975. Switzerland did likewise, with emphasis, during the second verification conference in 1980, supported by a great number of other non-nuclear states. Apart from other reasons, the dogmatic attitude of a minority of participating states caused the failure of that conference. What occurred was a revolt by a large majority of non-nuclear arms states against the nuclear powers. However, it appears that the United States under President Reagan is gradually recognizing the problem and will introduce a change in their nuclear policies (NEUE ZUERCHER ZEITUNG No 235, 10/11 October 1981; DIE ZEIT No 43, 16 October 1981, p 13).

#### A Presentation of the Swiss Attitude

The reason for writing this article is a recently published comprehensive study by Theodor Winkler, entitled "Nuclear Energy and Foreign Policy" (Berlin Verlag,

Berlin, 1981, 491 pp). The author is familiar with the subject matter and especially with all the details of Swiss policy in this area. He was a member of the Swiss delegation to the 1980 verification conference. He writes in great detail on nuclear proliferation and on the peaceful use of nuclear energy in general, this type of use in Switzerland in particular, and finally Switzerland's joining the nonproliferation treaty and problems resulting therefrom, with prospects for the future. He provides full details on the Swiss decisionmaking process in an important foreign policy matter, from extra- and intragovernmental arguments to the final decision. Appropriate space is devoted to the counterarguments which arose primarily from military and industrial sources, as well as the climax of the discussions in the hearings of the National Council's foreign policy committee. Winkler's description is factual, but at times tends to overly dramatize Swiss internal altercations resulting from the situation. But it does provide the outsider with a good deal of insight into the modus operandi of our institutions. In that context it also constitutes a textbook case by virtue of what the author describes as a fascinating and instructive chapter of Swiss foreign policy. In this article, we will not go into a detailed critical discussion of details.

We do however wish to express an opinion concerning one point. Winkler blames several absurdities in the preparatory work on personnel shortages in the federal government, which he considers to be a frightening situation. We feel on the other hand that certain government agencies still have not learned the art of setting priorities and to organize themselves accordingly. The personnel hiring freeze is generally justifiable; it merely means that the authorities must take it into consideration and not try to do everything at the same time. It is also regrettable that several of the important tables in the annex have not been updated. But this does not change the fact that we have here an excellent and most instructive work which should be widely disseminated.

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